

1 take into account parameters other than cost and benefit. For example, an order to execute
2 a stock trade might always be given the highest priority irrespective of any other
3 considerations. The prioritization can take into account both the cost and benefit values
4 assigned to a request as well as what other requests are waiting to be executed. For
5 example the system owner might establish a rule that specifies if there are five very low
6 costs requests (i.e. requests that can be quickly and easily executed) and there is one high
7 cost request waiting to be executed, execute the low cost requests prior to the high cost
8 requests. The examples given below illustrate ways in which the invention improves upon
9 the processing performed by ordinary servers:

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11 Example One:- Server task scheduling according to priority, derived from task benefit and
12 task cost. Assume that within a single interval, the following Web requests arrive at the
13 origin server:

14 1. benefit 20, cost 200 milliseconds
15 2. benefit 10, cost 20 milliseconds
16 3. benefit 10, cost 30 milliseconds
17 4. benefit 20, cost 50 milliseconds

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19 If they were scheduled in the order they arrived, the cumulative time and cumulative benefit
20 would be

21 1. total benefit 20 after 200 milliseconds
22 2. total benefit 30 after time 220 milliseconds
23 3. total benefit 40 after time 250 milliseconds
24 4. total benefit 60 after time 300 milliseconds

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26 If they were scheduled more optimally, the average response time and benefit per second
27 (millisecond) would be higher:

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29 2. total benefit 10 after time 20 milliseconds
30 4. total benefit 30 after time 70 milliseconds
31 3. total benefit 40 after time 100 milliseconds
32 1. total benefit 60 after time 300 milliseconds

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